

REMARKS

Favorable reconsideration of this application in view of the remarks to follow and allowance of the claims of the present application are respectfully requested.

Applicants have amended the specification as indicated in the above manner by correcting the spelling of "erythritol". Moreover, applicants have amended Claims 1, 12-14, 18 and 22. Support for the amendments can be found in the specification at Page 1, lines 4-5; Page 4, lines 7; Page 5, line 14-15; Page 8, lines 4-5; and Page 8, lines 16-17 and original Claim 14 of the instant specification. Furthermore, applicants have added new Claims 33-41. Claim 33 rewrites subject matter in original Claim 14. Support for Claims 34-41 can be found in the instant specification at Page 8, lines 4-5; Page 9, lines 10-13; Page 10, line 25; Page 8, line 6; Page 4, line 7; Page 4, lines 5-7; Page 10, lines 7-8; Page 6, lines 1-2; and Page 6, lines 5-8.

Applicants have also deleted Claims 2, 16-17, 19 and 23 without prejudice. It is to be noted that applicants have not abandoned the deleted subject matter and reserve the right to file a continuation application directed thereto.

Since the above amendments to the specification and claims do not introduce any new matter into the application, entry thereof is respectfully requested.

In the present Office Action, Claim 14 stands rejected under 35 U.S.C. §112, second paragraph as allegedly indefinite in view of the term "preferably" in Claim 14. In response to the instant §112 rejection, applicants have cancelled Claim 14 without prejudice. Claim 33, however, recites that the particle size of the weakly basic anion exchange resin ranges from 100-400 micrometers. As written, Claim 33 does not include the objected term "preferably". Thus, the rejection of Claim 14 under 35 U.S.C. §112, second paragraph is rendered moot. Moreover, it is respectfully submitted that Claim 33 which recites subject matter

in original Claim 14 complies with the requirements of 35 U.S.C. §112, second paragraph. Since the amendment to Claim 33 obviates the §112, second paragraph rejection, reconsideration and withdrawal of the instant rejection is respectfully requested.

In addition to the aforementioned formal ground of rejection, Claims 1, 5-18, 20-22 and 24-29 stand rejected under 35 U.S.C. §102(b) as allegedly anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Japan Patent No. 4-158260 to Hirata ('260) or what is allegedly conceded to be old on pages 1-3 of the instant specification.

Please note that in discussing the '260 patent, reference will be made to the PTO translation 06-3081 of Japanese Patent No. 4-158260.

Concerning the §102(b) rejection, it is axiomatic that anticipation under §102 requires that the prior art reference discloses each and every element of the claim to which it is applied. In re King, 801 F.2d, 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986). Thus, there must be no differences between the subject matter of the claim and the description of the claimed subject matter in the disclosure of the prior art reference. Stated another way, the reference must contain within its four corners a description of the invention, as claimed. The corollary of the rule is equally applicable: Absence from the applied reference of any claimed element negates anticipation. Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986).

Applicants submit that the claims of the present application are not anticipated by the disclosure of the '260 reference since the applied reference does not disclose applicants' claimed method which includes: (a) particle size of the filler being at least 100-2000 micrometers; and (b) the eluent used in the separation being water. Instead, in the '260 reference, the disclosed method includes: (a) an analytical method for analyzing saccharide; (b)

particle size of the filler being 3-50 micrometers (see the third paragraph on page 6); and (c) the eluent used in the process by 90% acetonitrile solution (see page 9 and the examples). Although the eluent in the '260 reference is an aqueous solution comprising acetonitrile, this is not the same as water. Moreover, as will be discussed infra, the '260 reference teaches away from the granular diameter of the anion exchange resin not exceeding 50 micrometers (see page 7 of the '260 reference).

The foregoing remarks clearly demonstrate that the '260 reference does not teach each and every aspect of the claimed invention, as required by King and Kloster Speedsteel; therefore the claims of the present application are not anticipated by the disclosure of the '260 reference. Applicants respectfully submit that the instant §102 rejection over the '260 reference has been obviated, and withdrawal thereof is respectfully requested.

With respect to the §103 rejection, applicants submit that the claims of the present invention are not rendered obvious by the disclosures of the '260 reference, since the applied reference do not teach or suggest applicants' claimed method.

Applicants submit that there are several differences between the methodology in the '260 reference and that of the present invention. For example, as indicated above, the '260 reference teaches that the column filling material in the anion exchange resin has a particle size no greater than 50 micrometers. Moreover, the '260 reference discloses that the particle size of the filler exceeding 50 micrometers causes drastic reduction of separation capacity and is not practical (see the third paragraph of page 7). In contrast, in the present invention, the particle size of the filler is 100-2000 micrometers. Therefore, the '260 reference actually teaches away from the present invention as presented in amended Claim 1. Further, the '260 reference teaches that a 50%-90% acetonitrile solution is used as eluant in the separation method disclosed therein,

whereas water is used as eluant in the present invention. To a person skilled in the art, 50%-90% acetonitrile solution is different from water since they have different properties, i.e., polarity. Therefore, it is not obvious for one ordinary skill to modify the teachings of the '260 reference, e.g., the particle size of the filler and the eluant, and apply them in the method of separation as claimed in the present invention with a reasonable expectation of success. In view of the above remarks, applicants submit that the present invention is indeed novel and is not obvious, especially when considering the teachings of the '260 reference.

The rejections under 35 U.S.C. §102(b) and §103 over the '260 reference have been obviated; therefore reconsideration and withdrawal thereof is respectfully requested.

With respect to the §102(b) rejection or, in the alternative, the §103 rejection to Claims 1, 5-18, 20-22 and 24-29 over what is allegedly conceded to be old on pages 1-3 of the instant specification, applicants submit that the claims of the present invention are neither anticipated, nor rendered obvious by the disclosures of the references discussed therein, since the applied references do not teach or suggest applicants' claimed method.

Pages 1-3 of the instant specification discuss the following references: the '260 reference, U.S. Patent No. 5,482,631 ('631), Publication to Tanaka et al. (Tanaka), U.S. Patent No. 6,153,791 ('791), Publication to Paskach et al. (Paskach), Publication to Murphy et al. (Murphy), Publication WO 00/42225 ('225), Publication to Bilik et al. (Bilik), Publication to Lindberg et al. (Lindberg), Publication to Oshima et al. (Oshima), Publication to Bauer et al. (Bauer), Publication to Brown (Brown), and Publication to Malan et al. (Malan).

Amended Claim 1 and Claims dependent thereon of the present invention relate, inter alia, to a method for separating components as defined in amended Claim 1 by using a weakly basic anion exchange resin. In contrast, with regard to the teachings of the above-

identified references, applicants submit that the '631 patent and the publications of Tanaka, Paskach, '225, Bilik, Lindberg, Oshima, Bauer, Brown and Malan do not disclose or suggest the use of weakly basic anion exchange resin (see Page 1, line 15 to Page 3, line 21 of the instant specification). The '260 reference was discussed hereinabove. Regarding the rest of the cited references, i.e., the '791 patent and the publication of Murphy, applicants submit that although they refer to the use of weakly basic anion exchanges resin, they teach away from the invention as defined in amended Claim 1. Specifically, the '791 patent discloses a method wherein the components comprised of sugars cannot be separated from each other (see Page 1, lines 29-31 of the instant specification), thus it teaches away from the present invention. Moreover, the Murphy reference refers to significant losses of neutral sugars in the separation method described therein(see Page 2, lines 3-13 of the instant specification), thus it also teaches away from the present invention because one ordinary skill would not utilize the teaching from Murphy to separate sugars. Thus, none of the references on pages 1-3 of the instant specification teach, disclose or suggest the present invention.

In view of the above remarks, applicants submit that the method of amended Claim 1 is neither anticipated nor rendered obvious in view of what is conceded to be old on pages 1-3 of the instant specification.

Claims 5-18, 20-22 and 24-29 depend from amended claim 1 and therefore incorporate all the limitations of amended claim 1 through such dependency. Consequently, Claims 5-18, 20-22 and 24-29 are patentably distinguished over what is conceded to be old on pages 1-3 of the instant specification for the same reasons explained hereinabove for amended claim 1. Therefore, applicants respectfully submit that the instant §102 and §103 rejections over

what is conceded to be old on pages 1-3 of the instant specification have been obviated, and withdrawal thereof is respectfully requested.

In the Office Action, Claim 3 is rejected under 103(a) as allegedly obvious over either the '260 reference or what is conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 5-18, 20-22, and 24-29 above, and further in view of either U.S. Patent No. 3,982,956 to Schoenrock ('956) or U.S. Patent No. 6,224,683 to Tanikawa ('683).

Claim 3 is directed to the use of a weakly acid cation exchange resin and a weakly basic anion exchange resin in the chromatographic separation of components as defined in amended Claim 1. The Examiner expressly conceded that Claim 3 recites the use of a weakly acid cation exchange resin and thus differs from the disclosure of the above-identified primary references, but attempted to remedy this deficiency of said primary references by additionally citing the '956 reference and the '683 reference.

Claim 3 depends from amended Claim 1 and therefore incorporates all the limitations of amended Claim 1 through such dependency. Consequently, Claim 3 is patentably distinguished over the disclosure in either the '260 reference or what is conceded to be old on pages 1-3 of the instant specification for the same reasons explained hereinabove for amended Claim 1. The '956 and the '683 references relate to decolorization and demineralization processes respectively, which processes are different from a chromatographic separation process claimed in the present invention and described in either the '260 reference or what is allegedly conceded to be old on pages 1-3 of the instant specification. Therefore, it is not obvious for one ordinary skill to combine the teachings of the '956 and '683 references with the '260 reference or what is allegedly conceded to be old on pages 1-3 of the instant specification and to apply the teachings of the references, i.e., the decolorization or demineralization process, in the process of

chromatographic separation as claimed in the present invention with a reasonable expectation of success of separation. Even combining all the references, they do not overcome the deficiencies of the primary references. At most, the '956 and '683 references disclose the use of a weakly acid cation exchange resin. However, the '956 and '683 references do not relate to separation of the components recited in amended Claim 1 using a weakly basic anion exchange resin. They do address any of the inadequacies of any of the primary references. Therefore, the combination cannot teach or suggest the use of weakly basic anion exchange resin in chromatographic separation for components as defined in amended Claim 1 wherein the eluant from the weakly basic anion exchange resin is water and the particle size of the filler is 100-2000 micrometers. Since the cited secondary references still fail to overcome the above-described deficiencies of the '260 reference and what is conceded to be old on pages 1-3 of the instant specification, applicants respectfully submit that Claim 3 is not rendered obvious over all the cited references. Withdrawal of the rejection of Claim 3 under 35 U.S.C. §103 is respectfully requested.

In the Office Action, Claims 3-4 are rejected under 35 U.S.C. §103(a) as allegedly obvious over either the '260 reference or what is allegedly conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 5-18, 20-22, and 24-29 above, and further in view of U.S. Patent No. 6,146,856 to Heikkila ('856).

Claims 3 and 4 are directed, inter alia, to the use of an acid cation exchange resin and a weakly basic anion exchange resin in the chromatographic separation of components as defined in amended Claim 1. The Examiner expressly conceded that Claims 3 and 4 recite the use of cation exchange resin and thus differs from the disclosure of the above-identified primary references, but attempted to remedy this deficiency of said primary references by citing the '856 reference.

Claims 3-4 depend from amended Claim 1 and therefore incorporate all the limitations of amended Claim 1 through such dependency. Thus, Claims 3-4 are patentably distinguished over the disclosure of either the '260 reference or what is conceded to be old on pages 1-3 of the instant specification for the same reasons explained hereinabove for amended Claim 1. The '856 reference relates to the use of cation exchange resins in the separation of convert and non-convert sugar and/or non-sugar components. Even combining the '856 reference with the primary references, the combination does not overcome the deficiencies of the primary references. At most, the '856 reference disclose the use of a cation exchange resin and does not relate to a separation of the components recited in amended Claim 1 using a weakly basic anion exchange resin. Therefore, the combination cannot teach or suggest the use of a weakly basic anion exchange resin in chromatographic separation for components as defined in amended Claim 1 wherein the eluant from the weakly basic anion exchange resin is water and the particle size of the filler is 100-2000 micrometers. Since the cited secondary reference still fails to overcome the above-described deficiencies of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification, applicants respectfully submit that Claims 3-4 are not rendered obvious over all the cited references.

In the Office Action, Claim 5 is rejected under 103(a) as allegedly obvious over either the '260 reference or what is allegedly conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 5-18, 20-22, and 24-29 above, and further in view of U.S. Patent No. 4,718,946 to Fries ('946).

Claim 5 is directed to the method of Claim 1 wherein the weakly basic anion exchange resin used thereof is an acrylic-based resin. The Examiner expressly conceded that the primary references do not disclose that the weakly basic anion exchange resin is an acrylic based

resin, thus differing from the disclosure of the above-identified primary references, but attempted to remedy this deficiency by additionally citing the '946 reference.

Claim 5 depends from amended Claim 1 and therefore incorporates all of the limitations of amended Claim 1 through such dependency. Consequently, Claim 5 is patentably distinguished over the disclosure of either the '260 reference or what is allegedly conceded to be old on pages 1-3 of the instant specification for the same reasons explained hereinabove for amended Claim 1. The '946 reference relates to the use of an acrylic anion exchange resin to remove sulfonic resin extractables from sugar solutions to reduce haze formation in such treatment. The combination of the '946 reference with the primary references does not overcome the deficiencies of the primary references. At most, the '946 reference discloses the use of an acrylic anion exchange resin and does not relate to separation of the components recited in amended Claim 1 using a weakly basic anion exchange resin. Therefore, the combination cannot teach or suggest the use of weakly basic anion exchange resin in chromatographic separation for components as defined in amended Claim 1 wherein the eluant from the weakly basic anion exchange resin is water and the particle size of the filler is 100-2000 micrometers. Since the cited secondary reference still fails to overcome the above-described deficiencies of the '260 reference and what is conceded to be old on pages 1-3 of the instant specification, applicants respectfully submit that Claim 5 is not rendered obvious by any of the cited references taken alone or in combination. Withdrawal of the '103 rejection is respectfully requested.

In the Office Action, Claims 6-11 are rejected under 35 U.S.C. §103(a) as allegedly obvious over either the '260 reference or what is allegedly conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 5-18, 20-22, and 24-29 above, and further

in view of either U.S. Patent No. 4,145,486 to Haag ('486) or U.S. Patent No. 5,863,438 to Katzakian ('438). Claim 11 is further rejected under 35 U.S.C. §103(a) as allegedly obvious over either the '260 reference or what is alleged conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 5-18, 20-22, and 24-29 above, and further in view of U.S. Patent No. 4,051,221 to Pannekeet ('221).

Claims 6-11 are directed, inter alia, to the use of various resins and optionally crosslinking of these resins that are used in the method of Claim 1. The Examiner expressly conceded that Claims 6-11 recite the use of styrene crosslinked with divinylbenzene and isoprene, thus differing from the disclosure of the above-identified primary references, but attempted to remedy this deficiency by citing the '486, '438 and '221 references.

Claims 6-11 depend from amended Claim 1 and therefore incorporate all the limitations of amended Claim 1 through such dependency. Consequently, Claims 6-11 are patentably distinguished over the disclosure of either the '260 reference or what is allegedly conceded to be old on pages 1-3 of the instant specification for the same reasons explained hereinabove for amended Claim 1. The '486 reference relates to a complex of a weak base exchange resin and a metal in the application of catalyzed reaction. The '438 reference relates to a process for deionization and demineralization of a fluid containing ions. The '221 reference relates to a process of recovering vanadium and molybdenum from an aqueous solution containing a vanadium compound. The processes disclosed in the above-identified three secondary references do not teach, disclose or suggest the use of an anion exchange resin for separating the specific components recited in amended Claim 1. Thus, there would be no reason for one of ordinary skill in the art to combine the teachings of the secondary references with the primary reference in the first instance. Moreover, the processes described in the '486, '438 and

'221 references are different from a chromatographic separation process claimed in the present invention for the specific components recited in Claim 1. Therefore, it is not obvious for one ordinary skill to combine the teachings of said three secondary references with the '260 reference or what is allegedly conceded to be old on pages 1-3 of the instant specification and to apply the teachings of the references, i.e., a complex of a weak base exchange resin and a metal in the application of catalyzed reaction; a process for deionization and demineralization of a fluid containing ions; and a process of recovering vanadium and molybdenum from an aqueous solution containing a vanadium compound, in the process of chromatographic separation as claimed in the present invention with a reasonable expectation of success of separation. Even combining the three secondary references with the primary references, the combination does not overcome the deficiencies of the primary references. At most, the three secondary references disclose the use of styrene crosslinked with divinylbenzene and isoprene, but the teachings therein do not relate to separation of the components recited in amended Claim 1 using a weakly basic anion exchange resin. Therefore, the combination cannot teach or suggest the use of weakly basic anion exchange resin in chromatographic separation for components as defined in amended Claim 1 wherein the eluant from the weakly basic anion exchange resin is water and the particle size of the filler is 100-2000 micrometers. Since the cited secondary references still fail to overcome the above-described deficiencies of the '260 reference and what is conceded to be old on pages 1-3 of the instant specification, applicants respectfully submit that Claim 6-11 are not rendered obvious over all the cited references. Thus, this rejection under 35 U.S.C. §103 is obviated, and withdrawal thereof is respectfully requested.

In the Office Action, Claims 20-22 and 25 are rejected under 35 U.S.C. §103(a) as allegedly obvious over either the '260 reference or what is conceded to be old on pages 1-3 of

the instant specification as applied to Claims 1, 5-18, 20-22, and 24-29 above, and further in view of U.S. Patent No. 5,637,225 to Heikkila ('225). Claims 26-28 are rejected under 103(a) as allegedly obvious over either the '260 reference or what is conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 5-18, 20-22, and 24-29 above, and further in view of U.S. Patent No. 5,730,877 to Heikkila ('877). Claim 27 is further rejected under 103(a) as allegedly obvious over either the '260 reference or what is conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 5-18, 20-22, and 24-29 above, and further in view of U.S. Patent No. 5,795,398 to Hyoky ('398).

Claims 20-22, 25-28 are directed, inter alia, to the separation of specific components in a mixture from one another as defined in amended Claim 1 using the method recited in Claim 1. The Examiner expressly conceded that Claims 20-22, 25-28 recite separating pentose, hexose, xylitol, rhamnose, maltose, inositol, and glycerol and thus differ from the disclosure of the above-identified primary references, but attempted to remedy this deficiency of the above-identified primary references by citing the '225, '877, and '398 references.

Claims 20-22, and 25-28 depend from amended Claim 1 and therefore incorporate all the limitations of amended Claim 1 through such dependency. Consequently, Claims 20-22, and 25-28 are patentably distinguished over the disclosure of either the '260 reference or what is allegedly conceded to be old on pages 1-3 of the instant specification for the same reasons explained hereinabove for amended Claim 1. The '225 reference relates to a method for the fractionation of sulphite cooking liquor. The '877 reference relates to a method for fractionating a solution by utilizing a chromatographic simulated moving bed. The '398 reference relates to a method for separating sucrose and a second dissolved component from a sucrose-containing solution, but it does not teach, disclose or suggest the use of a weakly basic anion exchange resin

for effecting the separation. Instead, the '398 reference discloses the use of a gel type strong cation exchange resin for effecting the separation. Applicants respectfully submit that one of ordinary skill in the art would not combine the '225, '877 or '398 references in the first instance since none of them teach or disclose the use of a weakly basic anion exchange resin for chromatographic separation. Even when combined, the three secondary references together with the primary references do not overcome the deficiencies of the primary references. None of the secondary references teach or disclose or suggest the use of a weakly basic anion exchange resin having the particle size of the filler ranging from 100-2000 micrometers for separating the components recited in Claim 1. Therefore, the combination cannot teach or suggest the use of weakly basic anion exchange resin in chromatographic separation for components as defined in amended Claim 1 wherein the eluant from the weakly basic anion exchange resin is water and the particle size of the filler is 100-2000 micrometers. Since the cited secondary references still fail to overcome the above-described deficiencies of the '260 reference and what is conceded to be old on pages 1-3 of the instant specification, applicants respectfully submit that Claim 20-22, and 25-28 are not rendered obvious over all the cited references.

In the Office Action, Claims 30-32 are rejected under 103(a) as allegedly obvious over either the '260 reference or what is allegedly conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 5-18, 20-22, and 24-29 above, and further in view of U.S. Patent No. 5,730,877 to Heikkila ('877).

Claims 30-32 are directed, inter alia, to a simulated moving bed system for the method of Claim 1. The Examiner expressly concurred that Claims 30-32 recite the use of simulated moving beds and thus differ from the disclosure of the above-identified primary references, but attempted to remedy this deficiency by citing the '877 reference.

Claims 30-32 depend from amended Claim 1 and therefore incorporate all the limitations of amended Claim 1 through such dependency. Consequently, Claims 30-32 are patentably distinguished over the disclosure by either the '260 reference or what is allegedly conceded to be old on pages 1-3 of the instant specification for the same reasons explained hereinabove for amended Claim 1. The '877 reference relates to a method for fractionating a solution by a chromatographic simulated moving bed. The '877 reference does not disclose the use of a weakly basic anion exchange resin having a filler whose particle size ranges from 100-2000 micrometers. Even combining the '877 reference with the primary references, the combination does not overcome the deficiencies of the primary references. At most, the '877 reference discloses the use of a simulated moving bed and does not relate to separation of the components recited in amended Claim 1 using a weakly basic anion exchange resin. Therefore, the combination cannot teach or suggest the use of weakly basic anion exchange resin in chromatographic separation for the components as defined in amended Claim 1 wherein the eluant from the weakly basic anion exchange resin is water and the particle size of the filler is 100-2000 micrometers.. Since the cited secondary reference still fails to overcome the above-described deficiencies of the '260 reference and what is conceded to be old on pages 1-3 of the instant specification, applicants respectfully submit that Claim 30-32 are not rendered obvious by any of the cited references, either alone or taken together.

In the Office Action, Claims 1, 3-18, 20-22 and 24-32 are rejected under 35 U.S.C. §103(a) as allegedly obvious over either US Patent No. 5,482,631('631) or WO 00/42225 ('225) in view of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification.

Both the '631 and the '225 references disclose the use of a strongly basic anion exchange resin for the separation of inositols and sugars. The Examiner expressly conceded that Claims 1, 3-18, 20-22 and 24-32 recite the use of weakly basic anion exchange resin, and thus differs from the disclosure of either the '631 or the '225 reference, but attempted to remedy this deficiency by combining the '631 and 225 references with the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification.

Applicants submit that the '260 reference teaches a filler having the particle size of no greater than 50 micrometers. Therefore, the combination of the primary references with the '260 reference only suggests, at best, the use of a weakly basic anion exchange resin wherein the particle size of the filler is no greater than 50 micrometers. In fact, this combination teaches away from the filler having particle size greater than 50 micrometers such as 100-2000 micrometers, as claimed. Therefore, the combination of the primary references with the '260 reference teaches away from the present invention wherein the particle size of the filler is 100-2000 micrometers.

Applicants further submit that, regarding the cited references in what is allegedly conceded to be old on pages 1-3 of the instant specification, the '631 patent and the publications of Tanaka, Paskach, '225, Bilik, Lindberg, Oshima, Bauer, Brown and Malan do not disclose or suggest the use of weakly basic anion exchange resin. Therefore, the combination of the primary references with the above-identified secondary references from what is allegedly conceded to be old on pages 1-3 of the instant specification, does not teach or suggest the use of a weakly basic anion exchange resin. Regarding the rest of the cited references from what is allegedly conceded to be old on pages 1-3 of the instant specification, i.e., the '791 patent and the publication of Murphy, applicants submit that although they refer to the use of weakly basic anion exchange

resin, they teach away from the invention as defined in the amended Claim 1. Specifically, the '791 patent discloses a method wherein the components comprised of sugars cannot be separated from each other with this method (see Page 1, lines 29-31 of the instant specification), thus it teaches away from the present invention. Consequently, based therein, one of ordinary skill in the art would not combine the primary reference with the '791 patent. Moreover, the Murphy reference refers to significant losses of neutral sugars in the separation method described therein(see Page 2, lines 3-13 of the instant specification), thus it also teaches away from the present invention because one ordinary skill would not utilize the teaching from Murphy to separate sugars as can be effected in the present invention. Thus, one of ordinary skill in the art would not combine the primary references with Murphy.

In view of the above remarks, applicants submit that the method of amended Claim 1 is neither anticipated nor rendered obvious over either the '631 or '225 references in view of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification.

Claims 3-18, 20-22 and 24-32 depend from amended claim 1 and therefore incorporate all the limitations of amended claim 1 through such dependency. Consequently, Claims 3-18, 20-22 and 24-32 are patentably distinguished over either the '631 or '225 references in view of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification for the same reasons explained hereinabove for amended claim 1. Therefore, applicants respectfully submit that the instant §103 rejections over either the '631 or '225 references in view of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification have been obviated, and withdrawal thereof is respectfully requested.

In the Office Action, Claim 3 is rejected under '103(a) as allegedly obvious over either the '631 reference or '225 reference in view of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 3-18, 20-22, and 24-32 above, and further in view of either U.S. Patent No. 3,982,956 to Schoenrock ('956) or U.S. Patent No. 6,224,683 to Tanikawa ('683).

Claim 3 is directed to the use of a weakly acid cation exchange resin and a weakly basic anion exchange resin in the chromatographic separation of components as defined in amended Claim 1. The Examiner expressly conceded that Claim 3, which recites the use of a weakly acid cation exchange resin, differs from the disclosure of the above-identified primary references, but attempted to remedy this deficiency of said primary references by citing the '956 reference and the '683 reference.

Claim 3 depends from amended Claim 1 and therefore incorporates all the limitations of amended Claim 1 through such dependency. Consequently, Claim 3 is patentably distinguished over the disclosure of either the '631 reference or '225 reference in view of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification for the same reasons explained hereinabove for amended Claim 1. The '956 and the '683 references relate to decolorization and demineralization processes respectively. They do not address the deficiencies recited hereinabove with respect to the combination of the '631 or '225 reference and either the '260 reference or what is allegedly conceded to be old on pages 1-3 of the instant specification. At most, the '956 and '683 references disclose the use of a weakly acid cation exchange resin and do not relate to separation of the components recited in amended Claim 1 using a weakly basic anion exchange resin. Thus, the combination does not address any of the deficiencies described herein with respect to amended Claim 1. Therefore, the

combination of these references cannot teach or suggest the use of a weakly basic anion exchange resin in the chromatographic separation for components, as defined in amended Claim 1, wherein the eluant from the weakly basic anion exchange resin is water and the particle size of the filler is 100-2000 micrometers. Since the cited secondary references still fail to overcome the above-described deficiencies of either the '631 reference or '225 reference in view of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification, applicants respectfully submit that Claim 3 is not rendered obvious over all the cited references.

In the Office Action, Claims 3-4 are rejected under 103(a) as allegedly obvious over either the '631 reference or '225 reference in view of the '260 reference and what is conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 3-18, 20-22, and 24-32 above, and further in view of U.S. Patent No. 6,146,856 to Heikkila ('856).

Claims 3 and 4 are directed, inter alia, to the use of an acid cation exchange resin and a weakly basic anion exchange resin in the chromatographic separation of components as defined in amended Claim 1. The Examiner expressly conceded that Claims 3 and 4 recite the use of a cation exchange resin and thus differs from the disclosure of the above-identified primary references, but attempted to remedy this deficiency of said primary references by citing the '856 reference.

Claims 3-4 depend from amended Claim 1 and therefore incorporate all the limitations of amended Claim 1 through such dependency. Thus, Claims 3-4 are patentably distinguished over the disclosure by either the '631 reference or '225 reference in view of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification for the same reasons explained hereinabove for amended Claim 1. The '856 reference relates to the use of cation exchange resins in the separation of convert and non-convert sugar and/or non-

sugar components. Even combining the '856 reference with the primary references, the combination does not overcome the deficiencies of the primary references. At most, the '856 reference discloses the use of a cation exchange resin and does not relate to separation of the components recited in amended Claim 1 using a weakly basic anion exchange resin. It does not address any of the deficiencies described hereinabove with respect to the combination of the '631 reference or '225 reference in combination with the '260 reference and what is allegedly conceded to be old on Pages 1-3 of the instant specification. Therefore, the combination cannot teach or suggest the use of weakly basic anion exchange resin in chromatographic separation for the components as defined in amended Claim 1 wherein the eluant from the weakly basic anion exchange resin is water and the particle size of the filler is 100-2000 micrometers. Since the cited secondary reference still fails to overcome the above-described deficiencies of either the '631 reference or '225 reference in view of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification, applicants respectfully submit that Claims 3-4 are not rendered obvious by all of the teachings of the cited references in combination.

In the Office Action, Claim 5 is rejected under 35 U.S.C. §103(a) as allegedly obvious over either the '631 reference or '225 reference in view of the '260 reference and what is conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 3-18, 20-22, and 24-32 above, and further in view of U.S. Patent No. 4,718,946 to Fries ('946 reference).

Claim 5 is directed to the method of Claim 1 wherein the weakly basic anion exchange resin used thereof is an acrylic-based resin. The Examiner expressly conceded that Claim 5, which recites that the weakly acid anion exchange resin is an acrylic based resin, differs from the disclosure of the above-identified primary references. The Examiner, however, attempted to remedy this deficiency by citing the '946 reference.

Claim 5 depends from amended Claim 1 and therefore incorporates all the limitations of amended Claim 1 through such dependency. Consequently, Claim 5 is patentably distinguished over the disclosure of either the '631 reference or '225 reference in view of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification for the same reasons explained hereinabove for amended Claim 1. The '946 reference relates to the use of an acrylic anion exchange resin to remove sulfonic resin extractables from sugar solutions to reduce haze formation in such treatment. Even combining the '946 reference with the primary references, the combination does not overcome the deficiencies of the primary references. At most, the '946 reference disclose the use of an acrylic anion exchange resin and does not relate to separation of the specific components recited in amended Claim 1 using a weakly basic anion exchange resin. The '946 reference refers to the use of the acrylic anion exchange resin for separating sulfates from sugars; sulfate is not one of the listed specific components recited in Claim 1. Furthermore, the teachings of the '946 reference does not address any of the deficiencies described hereinabove with respect to the '631 or '225 reference in combination with the '260 reference or what is allegedly conceded to be old on page 1-3 of the instant specification. Therefore, the combination cannot teach or suggest the use of weakly basic anion exchangeable resin in chromatographic separation for components as defined in amended Claim 1 wherein the eluant from the weakly basic anion exchange resin is water and the particle size of the filler is 100-2000 micrometers. Since the cited secondary reference still fails to overcome the above-described deficiencies of the '631 reference or '225 reference in view of the '260 reference and what is conceded to be old on pages 1-3 of the instant specification, applicants respectfully submit that Claim 5 is not rendered obvious over all the cited references.

In the Office Action, Claims 6-11 are rejected under 103(a) as allegedly obvious over either the '631 reference or '225 reference in view of the '260 reference and what is conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 3-18, 20-22, and 24-32 above, and further in view of either U.S. Patent No. 4,145,486 to Haag ('486) or U.S. Patent No. 5,863,438 to Katzakian ('438). Claim 11 is further rejected under 103(a) as allegedly obvious over either the '631 reference or '225 reference in view of the '260 reference and what is conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 3-18, 20-22, and 24-32 above, and further in view of U.S. Patent No. 4,051,221 to Pannekeet ('221).

Claims 6-11 are directed, inter alia, to the use of various resins and optionally crosslinking these resins that are used in the method of Claim 1. The Examiner expressly conceded that Claims 6-11 recite the use of styrene crosslinked with divinylbenzene and isoprene, thus differing from the disclosure of the above-identified primary references, but attempted to remedy this deficiency by citing the '486, '438 and '221 references.

Claims 6-11 depend from amended Claim 1 and therefore incorporate all of the limitations of amended Claim 1 through such dependency. Consequently, Claims 6-11 are patentably distinguished over the disclosure by either the '631 reference or '225 reference in view of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification for the same reasons explained hereinabove for amended Claim 1. The '486 reference relates to a complex of a weak base exchange resin and a metal in the application of catalyzed reaction. The '438 reference relates to a process for deionization and demineralization of a fluid containing ions. The '221 reference relates to a process of recovering vanadium and molybdenum from an aqueous solution containing a vanadium compound. Neither the '221 reference, '438 reference or the '486 reference teach, disclose or suggest the use of anion

exchange resin for separating the specific components in amended Claim 1. The processes disclosed in the above-identified three secondary references are different from a chromatographic separation process claimed in the present invention and described in either '631 reference, the '225 reference, the '260 reference and the more relevant art which is allegedly conceded to be old on pages 1-3 of the instant specification. Therefore, it is not obvious for one ordinary skill to combine the teachings of said three secondary references with the either '631 reference, the '225 reference, the '260 reference or what is allegedly conceded to be old on pages 1-3 of the instant specification and to apply the teachings of the references, i.e., a complex of a weak base exchange resin and a metal in the application of catalyzed reaction; a process for deionization and demineralization of a fluid containing ions; and a process of recovering vanadium and molybdenum from an aqueous solution containing a vanadium compound, in the process of chromatographic separation as claimed in the present invention with a reasonable expectation of success of separation. Even the combination the three secondary references with the other references does not overcome the deficiencies of the primary references described hereinabove. Further, at most, the three secondary references disclose the use of styrene crosslinked with divinylbenzene and isoprene and do not relate to the separation of the components recited in amended Claim 1 using a weakly basic anion exchange resin. Therefore, the combination cannot teach or suggest the use of weakly basic anion exchangeable resin in chromatographic separation for components as defined in amended Claim 1 wherein the eluant from the weakly basic anion exchange resin is water and the particle size of the filler is 100-2000 micrometers. Moreover, none of the secondary references address the deficiency described herein with respect to amended Claim 1 and the '631 or '225 reference in combination with either the '260 reference or that which is allegedly conceded to be old at pages 1-3 of the instant

specification. Since the cited secondary references still fail to overcome the above-described deficiencies of the '631 reference or '225 reference in view of the '260 reference and what is conceded to be old on pages 1-3 of the instant specification, applicants respectfully submit that Claim 6-11 are not rendered obvious by the combination of all of the cited references. Thus, the rejection under 35 U.S.C. §103 is overcome and withdrawal thereof is respectfully requested.

In the Office Action, Claims 20-22, and 25 are rejected under 35 U.S.C. §103(a) as allegedly obvious over either the '631 reference or '225 reference in view of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 3-18, 20-22, and 24-32 above, and further in view of U.S. Patent No. 5,637,225 to Heikkila ('225 reference). Claims 26-28 are rejected under §103(a) as allegedly obvious over either the '631 reference or '225 reference in view of the '260 reference and what is conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 3-18, 20-22, and 24-32 above, and further in view of U.S. Patent No. 5,730,877 to Heikkila ('877 reference). Claim 27 is further rejected under §103(a) as allegedly obvious over either the '631 reference or '225 reference in view of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 3-18, 20-22, and 24-32 above, and further in view of U.S. Patent No. 5,795,398 to Hyoky ('398 reference).

Claims 20-22, 25-28 are directed, inter alia, to the components being separated using the method of Claim 1. The Examiner expressly conceded that Claims 20-22, 25-28 recite separating pentose, hexose, xylitol, rhamnose, maltose, inositol, and glycerol and thus differ from the disclosure of the above-identified primary references, but attempted to remedy this deficiency of the above-identified primary references by citing the '225, '877, and '398 references.

Claims 20-22, and 25-28 depend from amended Claim 1 and therefore incorporate all the limitations of amended Claim 1 through such dependency. Consequently, Claims 20-22, and 25-28 are patentably distinguished over the disclosure of either the '631 reference or '225 reference in view of the '260 reference and what is allegedly conceded to be old on pages 1-3 of the instant specification for the same reasons explained hereinabove for amended Claim 1. The '225 reference relates to a method for the fractionation of sulphite cooking liquor. The '877 reference relates to a method for fractionating a solution by utilizing a chromatographic simulated moving bed. The '398 reference relates to a method for separating sucrose and a second dissolved component from a sucrose-containing solution, but it does not teach, disclose or suggest the use of a weakly basic anion exchange resin for effecting the separation. Instead, it discloses the use of a gel type strong cation exchange for effecting the separation. Applicants respectfully submit that one of ordinary skill in the art would not combine the '255, '877 or the '398 references with any of the primary references in the first instance since none of these secondary references teach, disclose or suggest the use of a weakly basic anion exchange resin for chromatographic separation. Moreover, the combination of all of these references does not overcome the deficiencies of the primary references. At most, the three secondary references disclose the separation of pentose, hexose, xylitol, rhamnose, maltose, inositol, and glycerol, but the three secondary references do not relate to the separation of the components recited in amended Claim 1 using a weakly basic anion exchange resin. Therefore, the combination cannot teach or suggest the use of weakly basic anion exchangeable resin in chromatographic separation for the components as defined in amended Claim 1 wherein the eluant from the weakly basic anion exchange resin is water and the particle size of the filler is 100-2000 micrometers. Since the cited secondary references still fail to overcome the above-described deficiencies of the '631

reference or '225 reference in view of the '260 reference and what is conceded to be old on pages 1-3 of the instant specification, applicants respectfully submit that Claim 20-22, and 25-28 are not rendered obvious over all the cited references. Withdrawal of the rejection under 35 U.S.C. §103 is respectfully requested.

In the Office Action, Claims 30-32 are rejected under 103(a) as allegedly obvious over either the '631 reference or '225 reference in view of the '260 reference and what is alleged conceded to be old on pages 1-3 of the instant specification as applied to Claims 1, 3-18, 20-22, and 24-32 above, and further in view of U.S. Patent No. 5,730,877 to Heikkila ('877).

Claims 30-32 are directed, inter alia, to the use of simulated moving bed system in the method of Claim 1. The Examiner expressly conceded that Claims 30-32, which recite the use of simulated moving beds differ from the disclosure of the above-identified primary references, but attempted to remedy this deficiency by citing the '877 reference.

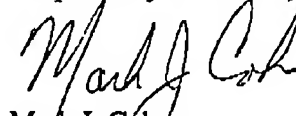
Claims 30-32 depend from amended Claim 1 and therefore incorporate all the limitations of amended Claim 1 through such dependency. Consequently, Claims 30-32 are patentably distinguished over the disclosure by either the '631 reference or '225 reference in view of the '260 reference and what is alleged conceded to be old on pages 1-3 of the instant specification for the same reasons explained hereinabove for amended Claim 1. The '877 reference relates to a method for fractionating a solution by a chromatographic simulated moving bed. The '877 reference does not disclose the use of a weakly basic anion exchange resin having a filler whose particle size range from 100-2000 micrometers. Even combining the '877 reference with all of the other references, the combination does not overcome the deficiencies of the primary references. At most, the '877 reference discloses the use of simulated moving bed and does not relate to separation of the components recited in amended Claim 1 using a weakly

basic anion exchange resin with the filler having a particle size of 100-2000 micrometers.

Therefore, the combination cannot teach or suggest the use of weakly basic anion exchange resin in chromatographic separation for components as defined in amended Claim 1 wherein the eluant from the weakly basic anion exchange resin is water and the particle size of the filler is 100-2000 micrometers. Since the cited secondary reference still fails to overcome the above-described deficiencies of the '631 reference or '225 reference in view of the '260 reference and what is conceded to be old on pages 1-3 of the instant specification, applicants respectfully submit that Claim 30-32 are not rendered obvious by any of the cited references and alone or in combination. The 35 U.S.C. §103 rejection is overcome, and withdrawal thereof is respectfully requested.

Thus, in view of the foregoing amendments and remarks, it is firmly believed that the present application is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,



Mark J. Cohen
Registration No. 32,211

Scully, Scott, Murphy & Presser, P.C.
400 Garden City Plaza-Suite 300
Garden City, New York 11530
(516) 742-4343
MJC/AZ:dg